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(54) **HANDLE OF MANUAL OPERATION MECHANISM OF CIRCUIT BREAKER**

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(52) **U.S. Cl.**
CPC ***H01H 21/22*** (2013.01)

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USPC 200/335
See application file for complete search history.

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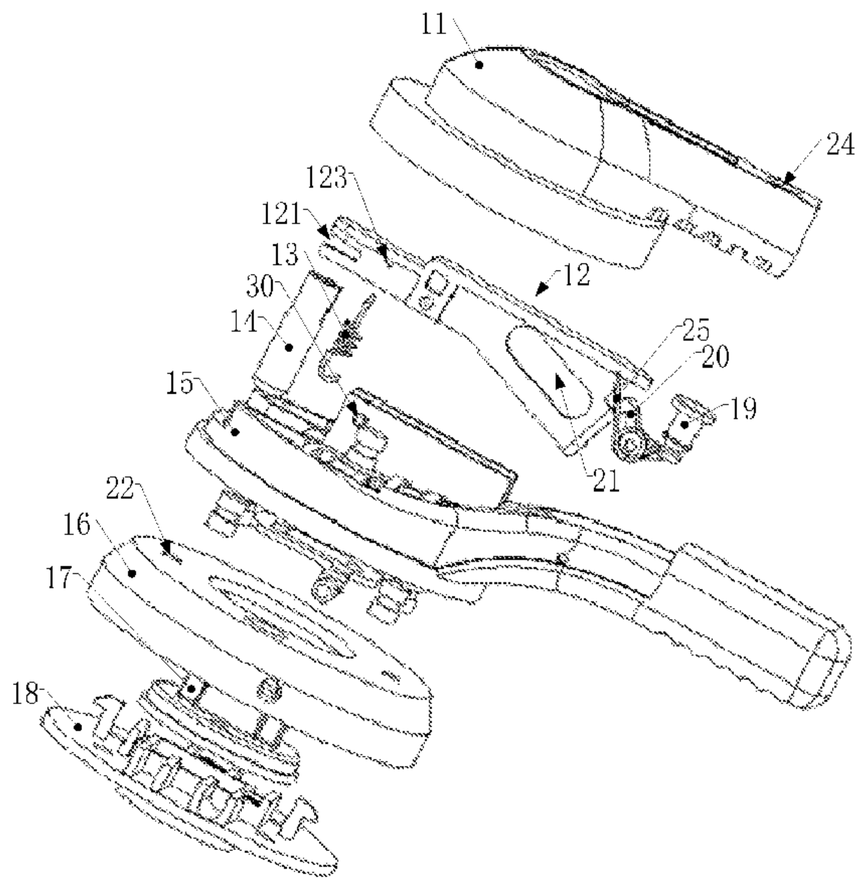
(57) **ABSTRACT**

A handle of a manual operation mechanism of a circuit breaker, which includes an operating handle, a padlock device, and a locking shaft, wherein a middle of the padlock device is pivotally arranged on the operating handle, a front end of the padlock device is connected with the locking shaft, the padlock device is connected with the operating handle through a first driving member, a rear end of the padlock device is in limit fit with a locking mechanism, a padlock hole is arranged in the rear end of the padlock device, and the padlock hole is shielded by the operating handle.

16 Claims, 6 Drawing Sheets



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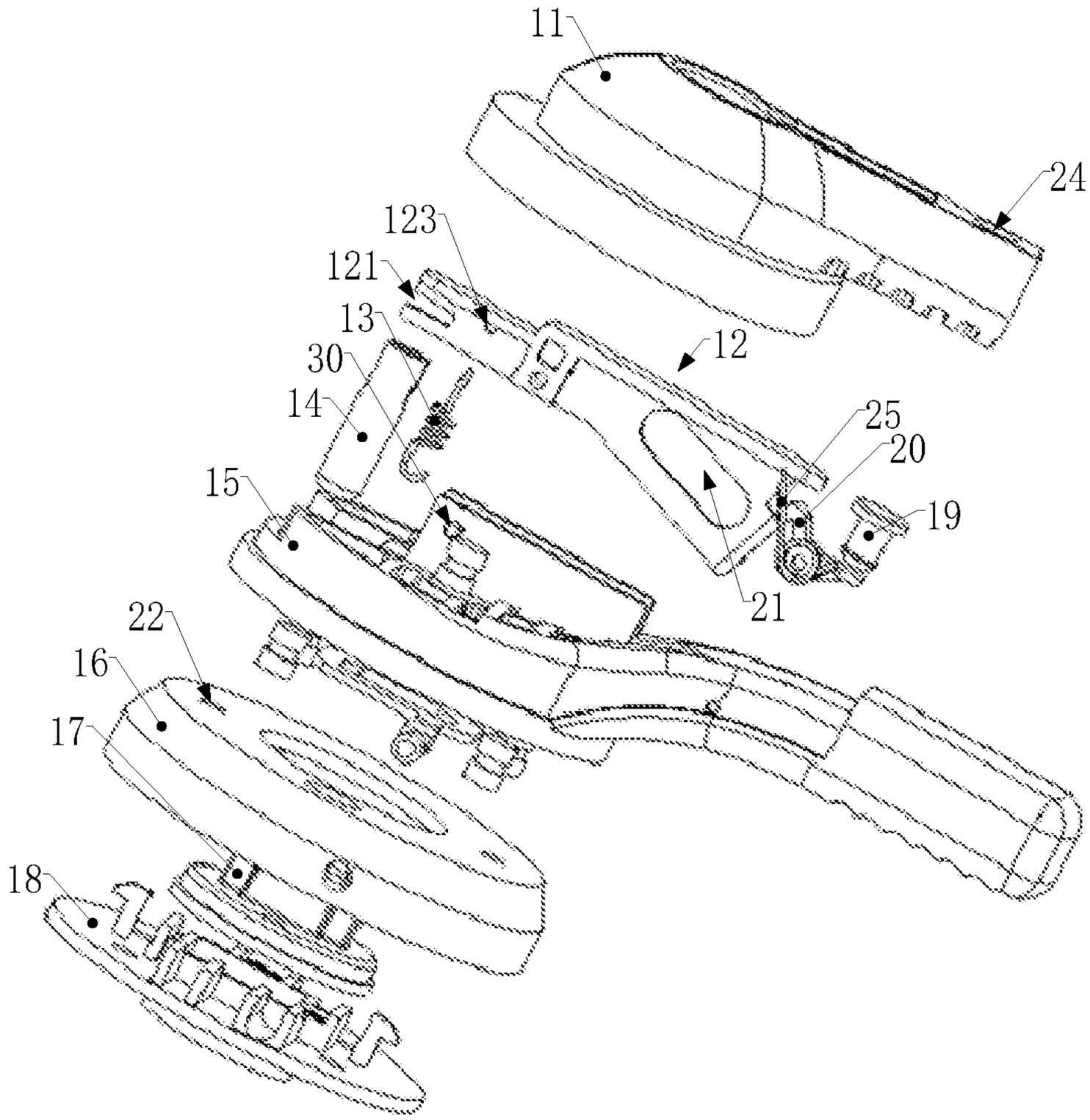

Fig. 1

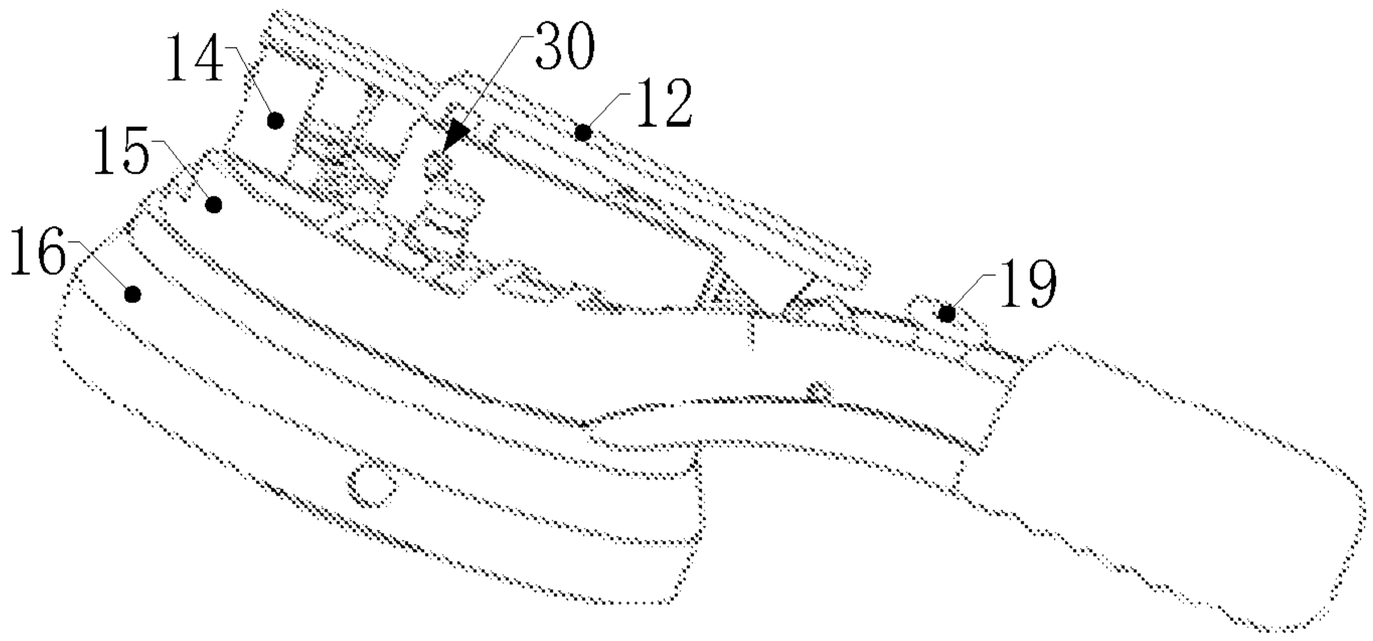

Fig.2

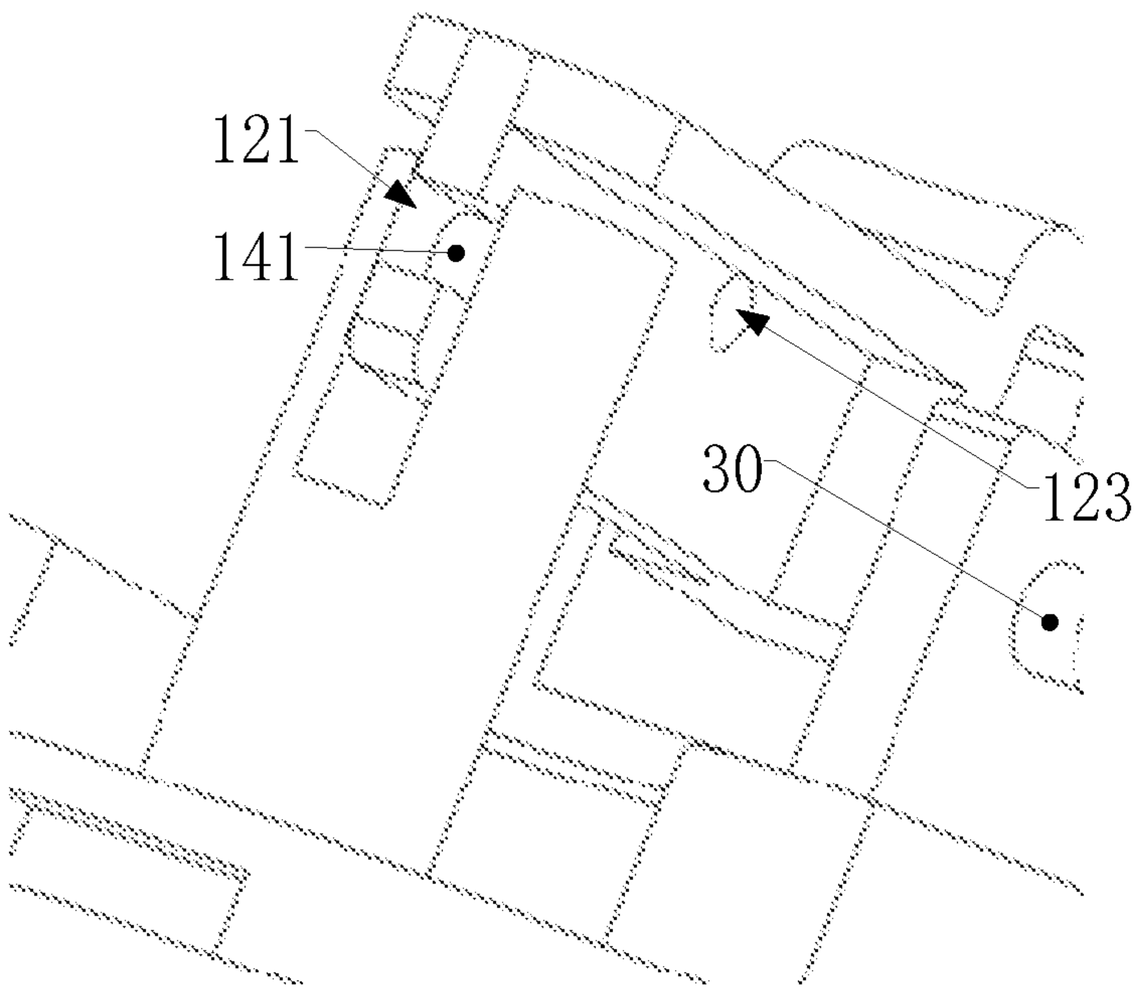

Fig.3

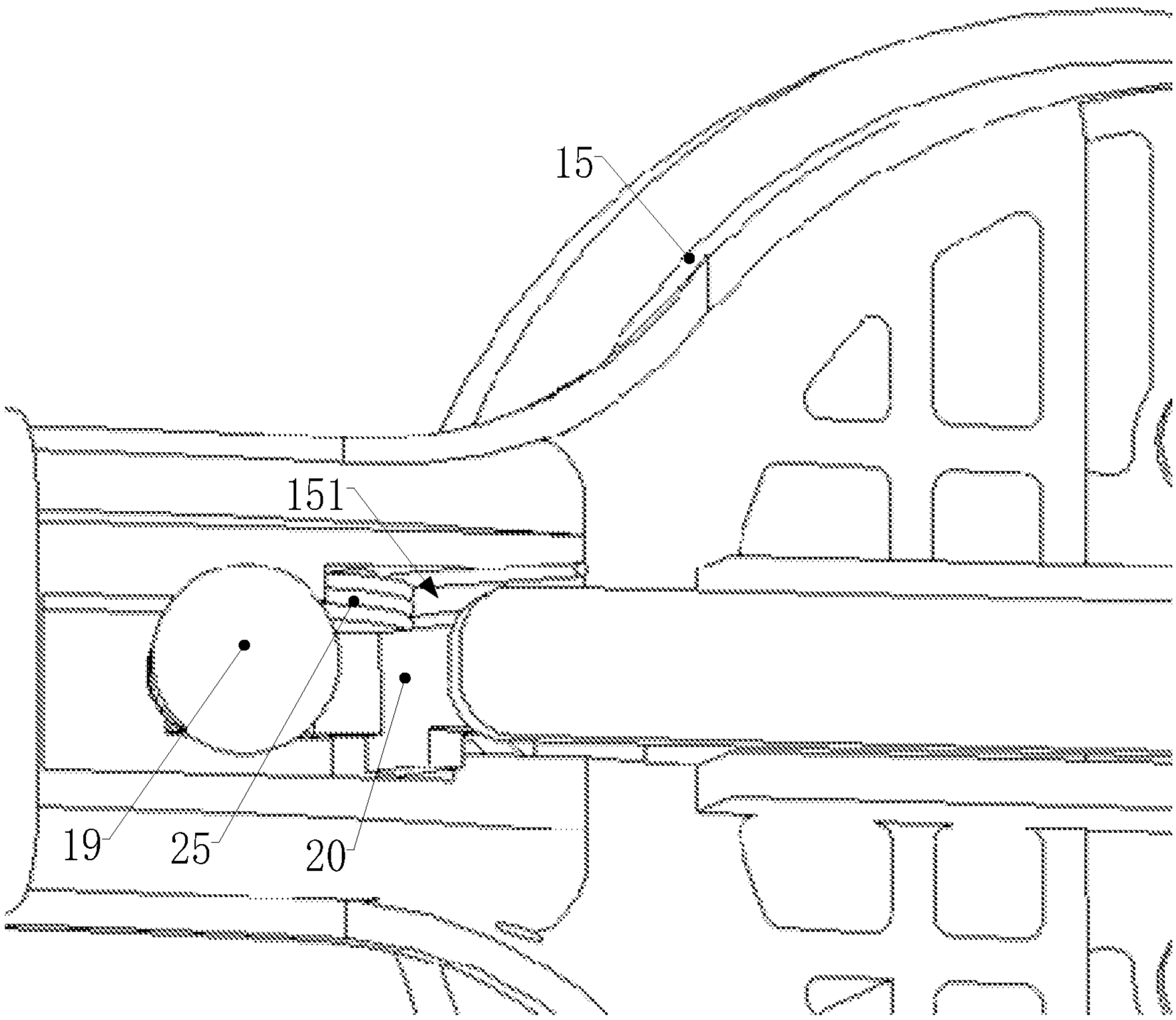

Fig.4

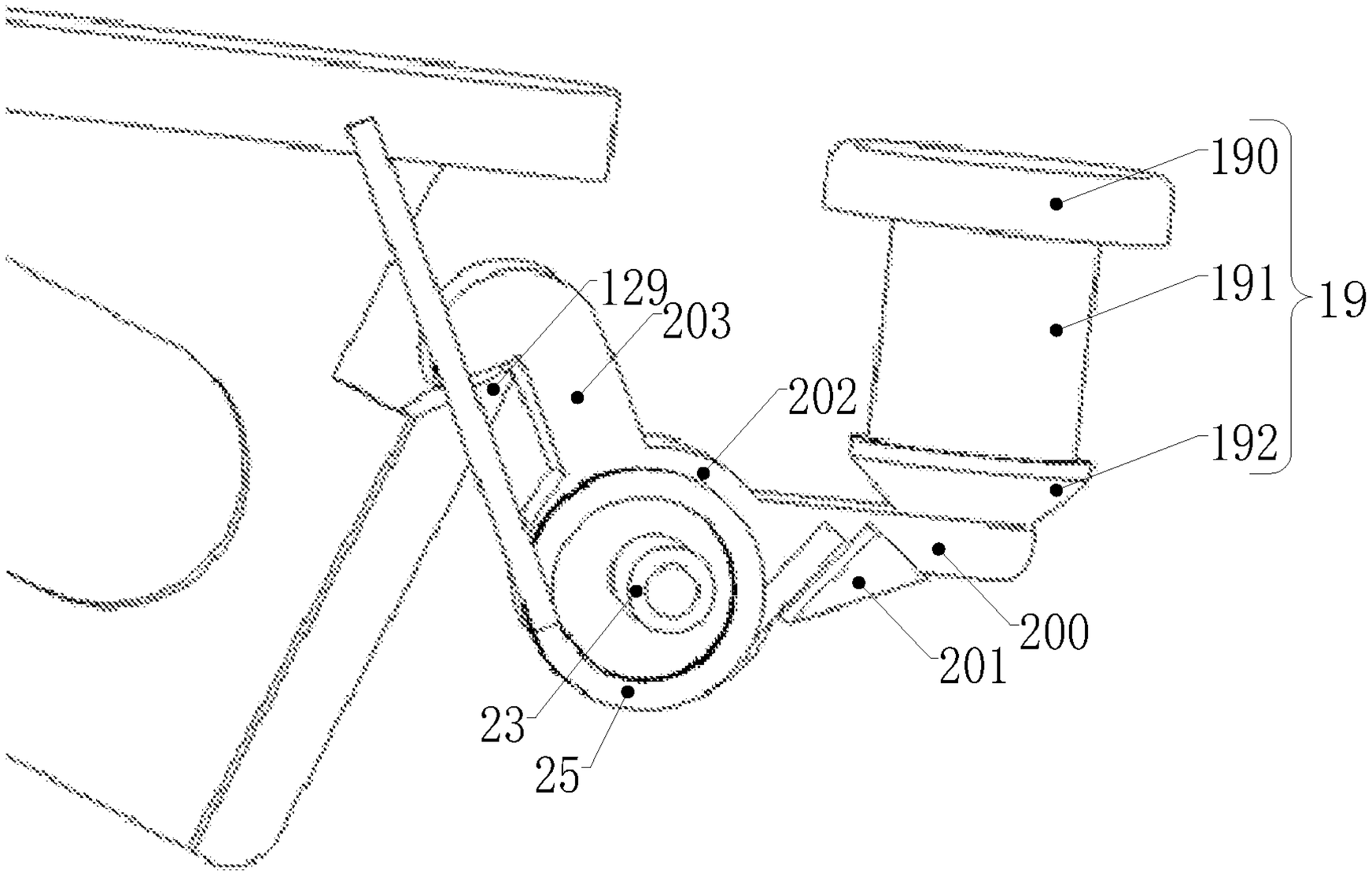

Fig.5

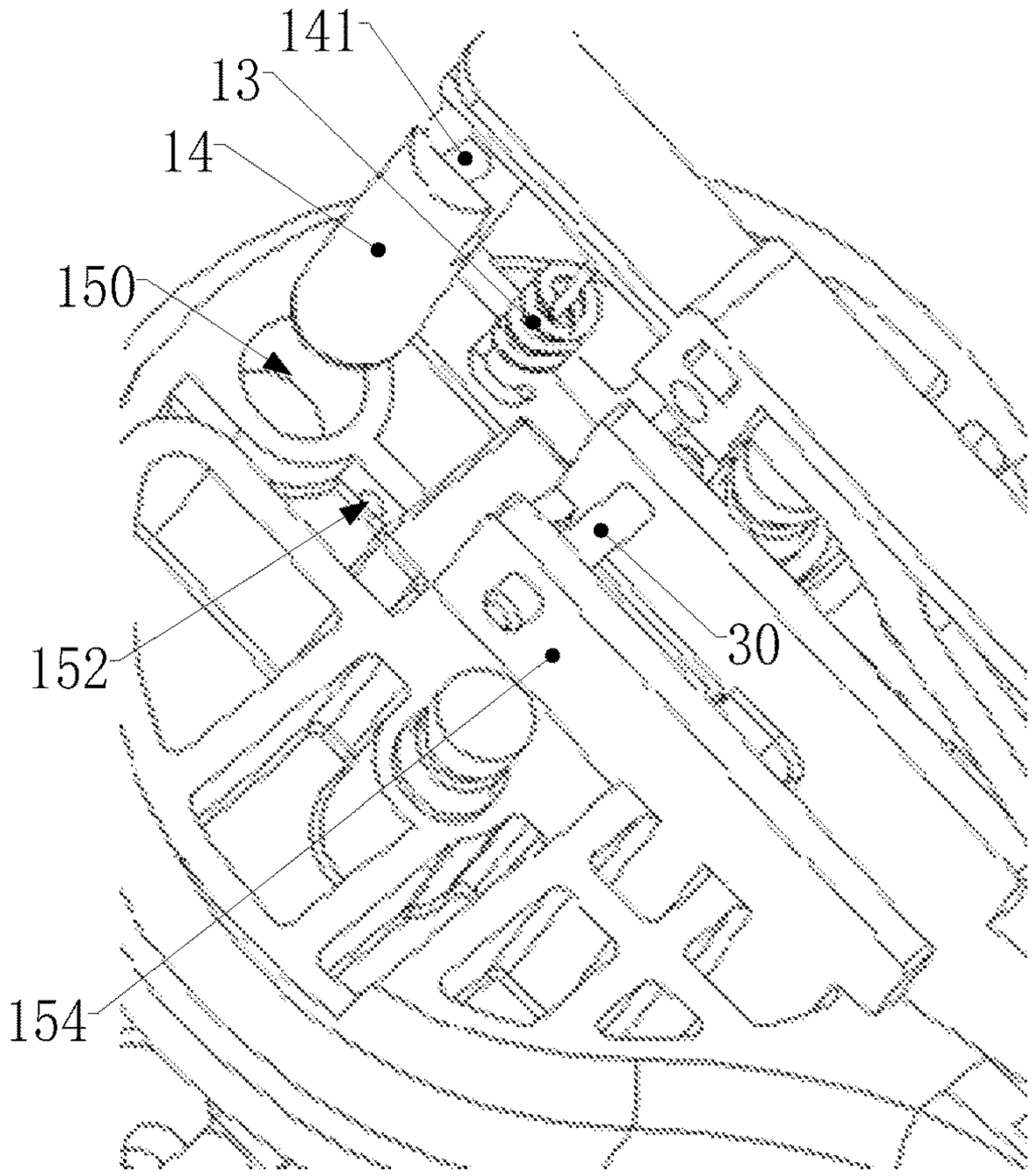

Fig.6

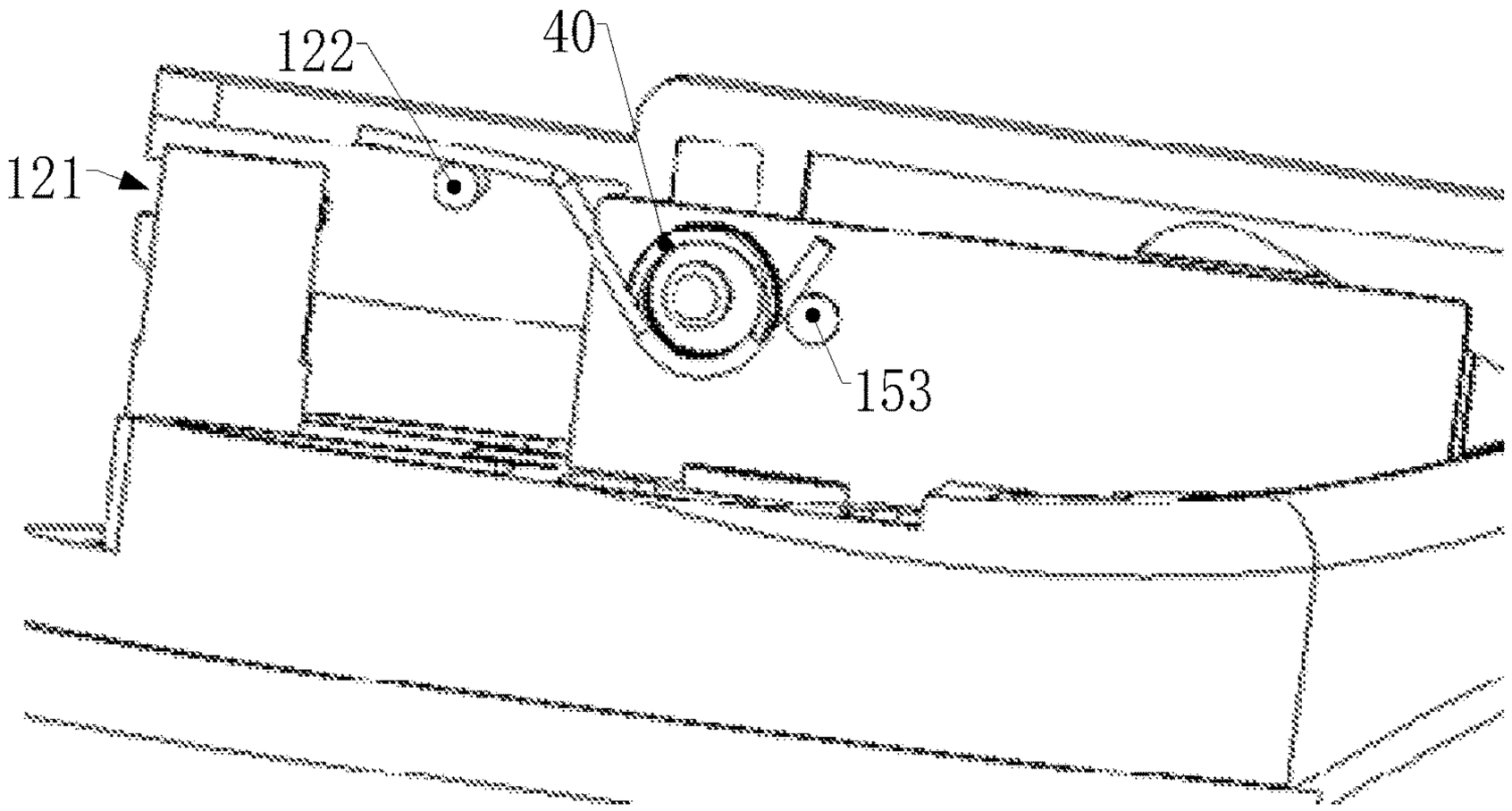

Fig.7

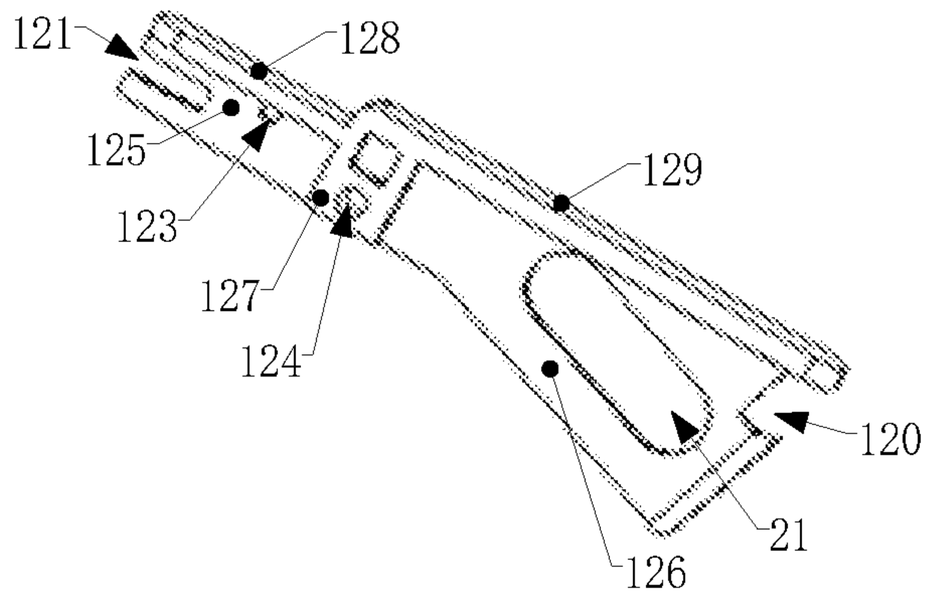

Fig.8

HANDLE OF MANUAL OPERATION MECHANISM OF CIRCUIT BREAKER

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a 35 U.S.C. §§ 371 national phase conversion of International Application No. PCT/CN2019/115861, filed Nov. 6, 2019, which claims priority to Chinese Patent Application No. 201811338386.1, filed Nov. 12, 2018, the contents of both of which are incorporated herein by reference. The PCT International Application was published in the Chinese language.

TECHNICAL FIELD

The present invention relates to the field of low-voltage electric appliances, and more particularly, to a handle of a manual operation mechanism of a circuit breaker.

BACKGROUND ART

According to an existing handle of a manual operation mechanism of a circuit breaker, a padlock device thereof often has a phenomenon that an action location is not in place, and the circuit breaker can still be operated to switch off and on after being locked, thus losing a protection function. Chinese patent CN205140837U discloses a handle of a manual operation mechanism of a circuit breaker, which is provided with a padlock device, but does not have a locking shaft for locking the padlock device. The user needs to maintain the position of the padlock device when operating the operating handle, which is inconvenient to operate. Moreover, after the padlock is installed, due to the inevitable gap between the padlock and the padlock hole, the reset spring will slightly pull down the rear end of the padlock device, causing the front end of the padlock device to move up slightly, causing the padlock device to be locked out of place, and the circuit breaker can still be operated.

SUMMARY OF THE INVENTION

The present invention aims to overcome the defects in the prior art, and provides a handle of a manual operation mechanism of a circuit breaker, the padlock device can be locked by the locking mechanism, so that a user rotates the operating handle conveniently, and after the circuit breaker is switched off/switched on to unlock the locking mechanism, the padlock device can automatically drive the locking shaft to lock the operating handle.

In order to achieve the above objective, the technical solutions used in the present invention are as follows.

A handle of a manual operation mechanism of a circuit breaker, comprising an operating handle **15**, a padlock device **12**, and a locking shaft **14**, a middle of the padlock device **12** is pivotally arranged on the operating handle **15**, a front end of the padlock device **12** is connected with the locking shaft **14**, the padlock device **12** is connected with the operating handle **15** through a first driving member, a rear end of the padlock device **12** is in limit fit with a locking mechanism, a padlock hole **21** is arranged in the rear end of the padlock device **12**, and the padlock hole **21** is shielded by the operating handle **15**;

when the circuit breaker is in a switch-off state, the locking mechanism is unlocked, the first driving member makes the front end of the padlock device **12** sink to drive the locking shaft **14** to lock the operating handle **15**, and meanwhile, the rear end of the padlock device **12** is raised up to expose the padlock hole **21** from an inside of the operating handle **15**.

Preferably, the first driving member is a spring **13**, one end of the spring **13** is connected with the padlock device **12**, and the other end of the spring is connected with the operating handle **15**.

Preferably, the middle of the padlock device **12** is pivotally arranged on the operating handle **15** through a first pivot **30**; and the first driving member is a torsion spring **40**, the torsion spring **40** is sleeved on the first pivot **30**, one end of the torsion spring is connected with the padlock device **12** and the other end of the torsion spring is connected with the operating handle **15**.

Preferably, the locking mechanism comprises a locking member **20**, a rear-end torsion spring **25**, and an operating button **19**, a middle of the locking member **20** is pivotally arranged on the operating handle **15** through a second pivot **23**, the rear-end torsion spring **25** is sleeved on the second pivot **23**, one end of the rear-end torsion spring is connected with the operating handle **15**, the other end of the rear-end torsion spring is connected with the locking member **20**, one end of the locking member **20** is in limit fit with the rear end of the padlock device **12**, the other end of the locking member fits with the operating button **19**, and when the operating button is pressed, the locking member **20** releases the rear end of the padlock device **12**, the front end of the padlock device **12** sinks, and the rear end of the padlock device is raised up.

Preferably, the locking member **20** comprises a locking member main body **202**, a locking member pressing plate **200**, and a locking member hook **203**, the locking member main body **202** is pivotally arranged on the operating handle **15** through the second pivot **23**, the locking member pressing plate **200** fits with the operating button **19**, and the locking member hook **203** is in limit fit with the rear end of the padlock device **12**.

Preferably, the locking member hook **203** and the locking member pressing plate **200** are respectively arranged at two ends of the locking member main body **202**, so that the locking member **20** has a V-shaped structure as a whole.

Preferably, the padlock device **12** is a rod-shaped member, which comprises a first clamping groove **121** arranged at the front end of the padlock device **12**, one end of the locking shaft **14** is provided with a locking shaft slot, a locking shaft cross bar **141** is arranged in the locking shaft slot, and the locking shaft cross bar **141** is clamped in the first clamping groove **121** and is in sliding fit with the first clamping groove.

Preferably, the rear end of the padlock device **12** is provided with a first locking groove **120** in limit fit with the locking member hook **203**.

Preferably, the middle of the padlock device **12** is pivotally arrange on the operating handle **15** through a first pivot **30**, the padlock device **12** comprises a first spring hanging hole **123**, and the first spring hanging hole **123** is arranged between a first clamping groove **121** of the padlock device **12** and the first pivot **30**; and a second spring hanging hole **152** is arranged in the operating handle **15**, one end of the spring **13** is connected with the first spring hanging hole **123**, and the other end of the spring is connected with the second spring hanging hole **152**.

Preferably, the operating handle **15** comprises a first fixing plate **154** arranged thereon and a first convex column **153** arranged on the first fixing plate **154**; and the padlock device **12** comprises a second convex column **122** arranged thereon, the second convex column **122** is located between

the first clamping groove **121** of the padlock device **12** and the first pivot **30**, one end of the torsion spring **40** is connected with the first convex column **153**, and the other end of the torsion spring is connected with the second convex column **122**.

Preferably, the padlock device **12** is a rod-shaped member, which comprises a first ridge plate **129**, a second ridge plate **128**, a first web plate **126**, a second web plate **125**, a first clamping groove **121**, the padlock hole **21**, a shaft plate **127**, and a first locking groove **120**, the shaft plate **127** is pivotally arranged on the operating handle **15** through a first pivot **30**, the first ridge plate **129**, the shaft plate **127**, and the second ridge plate **128** are sequentially connected, the first web plate **126** is arranged on one side of the first ridge plate **129** and the first web plate **126** is respectively connected with the first ridge plate **129** and the shaft plate **127**, the second web plate **125** is arranged on one side of the second ridge plate **128** and the second web plate **125** is respectively connected with the second ridge plate **128** and the shaft plate **127**, the first web plate **126** and the second web plate **125** are respectively located on two sides of the shaft plate **127**, the first web plate **126** and the second web plate **125** are located on a same side of the first ridge plate **129**, the first clamping groove **121** is arranged at one end of the second web plate **125** far away from the shaft plate **127**, the padlock hole **21** is arranged in a middle of the first web plate **126**, and the first locking groove **120** is arranged at one end of the first web plate **126** far away from the shaft plate **127**.

Preferably, the padlock device **12** further comprises a first spring hanging hole **123** arranged in the second web plate **125**, and the first spring hanging hole **123** is arranged between the first clamping groove **121** and the shaft plate **127**.

Preferably, the padlock device **12** further comprises a second convex column **122** arranged on the second web plate **125**, and the second convex column **122** is arranged between the first clamping groove **121** and the shaft plate **127**.

Preferably, the operating handle **15** comprises a first fixing plate **154**, a locking shaft sliding hole **150**, and a locking mechanism assembly hole **151**, two first fixing plates **154** are arranged on the operating handle **15** in parallel at an interval, the locking shaft sliding hole **150** is arranged outside one end of the first fixing plate **154**, and the locking mechanism assembly hole **151** is arranged outside the other end of the first fixing plate **154**.

Preferably, the operating handle **15** further comprises a second spring hanging hole **152**, and the second spring hanging hole **152** is arranged between the locking shaft sliding hole **150** and the first fixing plate **154**.

Preferably, the operating handle **15** further comprises a first convex column **153**, and the first convex column **153** is arranged on one side of the first fixing plate **154**.

According to a handle of a manual operation mechanism of a circuit breaker of the present invention, when the circuit breaker is in a switch-off state, a locking mechanism is unlocked, a first driving member makes a front end of a padlock device sink, the padlock device drives a locking shaft to automatically lock an operating handle, so that the operating handle cannot rotate continuously, thus being beneficial for improving a safety of using electricity, and a padlock hole in a rear end of the padlock device is exposed from an inside of the operating handle, and is used for padlocking the padlock device; and the locking mechanism may keep the padlock device in a locked state, and a user may freely operate the operating handle without pressing the padlock device while operating, thus simplifying the operation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic structural diagram of a handle of a manual operation mechanism of a circuit breaker of the present invention;

FIG. **2** is a schematic structural diagram of assembly of a padlock device and an operating handle of the present invention;

FIG. **3** is a schematic structural diagram of assembly of the padlock device and a locking shaft of the present invention;

FIG. **4** is a schematic structural diagram of assembly of a button, a lock catch, the padlock device, and the operating handle of the present invention;

FIG. **5** is a schematic structural diagram of assembly of the button, the lock catch, and the padlock device of the present invention;

FIG. **6** is a schematic structural diagram of assembly of the padlock device, a spring, and the operating handle of the present invention;

FIG. **7** is a schematic structural diagram of assembly of the padlock device, a torsion spring, and the operating handle of the present invention; and

FIG. **8** is a schematic structural diagram of the padlock device of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The specific implementations of a handle of a manual operation mechanism of a circuit breaker of the present invention are further described hereinafter with reference to the embodiments shown in FIG. **1** to FIG. **8**. The handle of the manual operation mechanism of the circuit breaker of the present invention is not limited to the descriptions in the following embodiments.

A handle of a manual operation mechanism of a circuit breaker in the present invention, comprises an operating handle **15**, a padlock device **12**, and a locking shaft **14**, wherein a middle of the padlock device **12** is pivotally arranged on the operating handle **15**, a front end of the padlock device **12** is connected with the locking shaft **14**, the padlock device **12** is connected with the operating handle **15** through a first driving member, a rear end of the padlock device **12** is in limit fit with a locking mechanism, a padlock hole **21** is arranged in the rear end of the padlock device **12**, and the padlock hole **21** is shielded by the operating handle **15**;

when the circuit breaker is in a switch-off state, the locking mechanism is unlocked, the first driving member makes the front end of the padlock device **12** sink to drive the locking shaft **14** to lock the operating handle **15**, and meanwhile, the rear end of the padlock device **12** is raised up to expose the padlock hole **21** from an inside of the operating handle **15**.

According to a handle of a manual operation mechanism of a circuit breaker of the present invention, when the circuit breaker is in a switch-off state, a locking mechanism is unlocked, a first driving member makes a front end of a padlock device **12** sink, the padlock device **12** drives a locking shaft **14** to automatically lock an operating handle **15**, so that the operating handle **15** cannot rotate continuously, thus being beneficial for improving a safety of using

electricity, and a padlock hole **21** in a rear end of the padlock device **12** is exposed from an inside of the operating handle **15**, and is used for padlocking the padlock device **12**; and the locking mechanism may keep the padlock device in a locked state, and a user may freely operate the operating handle **15** without pressing the padlock device **12** while operating, thus simplifying the operation.

FIG. **1** and FIG. **2** show an embodiment of the handle of the manual operation mechanism of the circuit breaker of the present invention.

The handle of the manual operation mechanism of the circuit breaker of the present invention fits with a circuit breaker handle of the circuit breaker to switch off/on the circuit breaker.

As shown in FIG. **1** and FIG. **2**, the handle of the manual operation mechanism of the circuit breaker includes an operating handle **15**, a padlock device **12**, and a locking shaft **14**. A middle of the padlock device **12** is pivotally arranged on the operating handle **15**, a front end of the padlock device **12** is connected with the locking shaft **14**, the padlock device **12** is connected with the operating handle **15** through a first driving member, a rear end of the padlock device **12** fits with a locking mechanism, a padlock hole **21** is arranged in the rear end of the padlock device **12**, and the padlock hole **21** is shielded by the operating handle **15**. When the circuit breaker is in a switch-off state, the locking mechanism is unlocked, the first driving member makes the front end of the padlock device **12** sink, and the padlock device **12** drives the locking shaft **14** to lock the operating handle. Meanwhile, the rear end of the padlock device **12** is raised up to expose the padlock hole **21** from an inside of the operating handle **15**. It should be pointed out that "when the circuit breaker is in a switch-off state" in the above content refers to a condition when the circuit breaker is converted to a switch-off state by rotating the operating handle **15**.

Specifically, in a direction shown in FIG. **1**, the padlock device **12** is arranged on an upper side of the operating handle **15**, and the middle of the padlock device **12** is pivotally arranged on the operating handle **15** through a first pivot **30**. A left end of the padlock device **12** is connected with the locking shaft **14**, a right end of the padlock device **12** is in limited fit with the locking mechanism, and the padlock hole **21** is arranged in the right end of the padlock device **12**.

Preferably, the padlock hole **21** is an elongated hole capable of accommodating at least three locks at the same time.

Preferably, in a direction shown in FIG. **1** and FIG. **3**, the left end of the padlock device **12** is provided with a first clamping groove **121**. In a direction shown in FIG. **3**, an upper end of the locking shaft **14** is provided with a locking shaft slot, a locking shaft cross bar **141** is arranged in the locking shaft slot, and the locking shaft cross bar **141** is clamped in the first clamping groove **121** and is in sliding fit with the first clamping groove. Further, the first clamping groove **121** is an elongated groove, and when the locking shaft **14** moves up and down, the locking shaft cross bar **141** slides in the first clamping groove **121**.

Preferably, in a direction shown in FIG. **1**, the first driving member is a spring **13**, the right end of the padlock device **12** is provided with a first spring hanging hole **123**, and the first spring hanging hole **123** is arranged between the first clamping groove **121** and the first pivot **30**. In a direction shown in FIG. **6**, the operating handle **15** includes a second hanging spring hole **152** arranged thereon, and the second hanging spring hole **152** is located below the padlock device **12**. An upper end of the spring **13** is connected with the first hanging spring hole **123**, and a lower end of the spring **13** is connected with the second hanging spring hole **152**.

Preferably, in a direction shown in FIG. **7**, the first driving member is a torsion spring **40**, and the torsion spring **40** is sleeved on the first pivot **30**. The padlock device **12** includes a second convex column **122** arranged thereon, and the second convex column **122** is located between the first clamping groove **121** and the first pivot **30**. The operating handle **15** includes a first convex column **153**, and the first convex column **153** is arranged on a first fixing plate **154** and is located on one side of the first pivot **30**. A left end of the torsion spring **40** is connected with the first convex column **153**, and a right end of the torsion spring is connected with the second convex column **122**.

Preferably, as shown in FIG. **1** and FIG. **5**, the locking mechanism includes a locking member **20**, a rear-end torsion spring **25**, and an operating button **19**. The locking member **20** is pivotally arranged on the operating handle **15** through a second pivot **23**, one end of the locking member **20** is in limit fit with the rear end of the padlock device **12**, and the other end of the locking member is in driving fit with the operating button **19**. The rear-end torsion spring **25** is sleeved on the second pivot **23**, one end of the rear-end torsion spring is connected with the operating handle **15**, and the other end of the rear-end torsion spring is connected with the locking member **20**.

Preferably, as shown in FIG. **1**, The handle of the manual operation mechanism of the circuit breaker of the present invention further includes a handle shell **11**, an upper cover **16**, a shaft sleeve **17**, and a lower cover **18**. The handle shell **11** is fixedly connected with the operating handle **15**, the padlock device **12** is arranged on an upper side of the operating handle **15** and is located in a space formed by the handle shell **11** and the operating handle **15**. The upper cover **16** and the lower cover **18** are sequentially arranged on a lower side of the operating handle **15**, and the shaft sleeve **17** is assembled between the upper cover **16** and the lower cover **18**, and fits with the operating handle **15**.

Certainly, the handle of the manual operation mechanism of the circuit breaker of the present invention further includes other necessary components to transmit an action of the operating handle **15** to the circuit breaker handle of the circuit breaker to switch off/on the circuit breaker.

FIG. **8** shows an embodiment of the padlock device **12** of the present invention.

In a direction shown in FIG. **8**, the padlock device **12** is a rod-shaped member, which includes a first ridge plate **129**, a second ridge plate **128**, a first web plate **126**, a second web plate **125**, a first clamping groove **121**, the padlock hole **21**, a shaft plate **127**, and a first locking groove **120**. The shaft plate **127** is pivotally arranged on the operating handle **15** through a first pivot **30**, the first ridge plate **129**, the shaft plate **127**, and the second ridge plate **128** are sequentially connected, the first web plate **126** is arranged on a lower side of the first ridge plate **129**, and the first web plate **126** is respectively connected with the first ridge plate **129** and the shaft plate **127**. The second web plate **125** is arranged on a lower side of the second ridge plate **128**, and the second web plate **125** is respectively connected with the second ridge plate **128** and the shaft plate **127**. The first web plate **126** and the second web plate **125** are respectively located on two sides of the shaft plate **127**, and the first web plate **126** and the second web plate **125** are both located on a lower side of the first ridge plate **129**. The first clamping groove **121** is arranged at one end of the second web plate **125** far away from the shaft plate **127** (which means that the first clamping groove **121** is arranged at a left end of the second web plate

125), the padlock hole **21** is arranged in a middle of the first web plate **126**, and the first locking groove **120** is arranged at one end of the first web plate **126** far away from the shaft plate **127** (which means that the first locking groove **120** is arranged at a right end of the first web plate **126**).

Preferably, the padlock device **12** further includes a first spring hanging hole **123** arranged in the second web plate **125**, and the first spring hanging hole **123** is arranged between the first clamping groove **121** and the shaft plate **127**.

Preferably, the first web plate **126** and the second web plate **125** have a same thickness, a thickness of the shaft plate **127** is greater than that of the first web plate **126**, and a first shaft hole **124** fitting with the first pivot **30** is arranged in the shaft plate **127**. A thickened design is adopted in the shaft plate **27**, which can prolong a service life of the padlock device **12**.

Preferably, the first ridge plate **129** and the second ridge plate **128** are staggered, an upper side face of the first ridge plate **129** is flush with an upper end of the shaft plate **27**, and the second ridge plate **128** is connected with a middle of the shaft plate **27**.

FIG. **7** shows another embodiment of the padlock device **12** of the present invention, which is different from the above embodiment in that: the padlock device **12** of the embodiment is not provided with the first spring hanging hole **123**. The padlock device **12** of the embodiment includes a second convex column **122** arranged on the second web plate **125**, and the second convex column **122** is arranged between the first clamping groove **121** and the first pivot **30**.

FIG. **5** shows an embodiment of the locking mechanism of the present invention.

As shown in FIG. **5**, the locking mechanism includes a locking member **20**, a rear-end torsion spring **25**, and an operating button **19**. A middle of the locking member **20** is pivotally arranged on the operating handle **15** through a second pivot **23**, and the rear-end torsion spring **25** is sleeved on the second pivot **23**. One end of the rear-end torsion spring is connected with the operating handle **15**, and the other end of the rear-end torsion spring is connected with the locking member **20**. One end of the locking member **20** is in limit fit with the rear end of the padlock device **12**, and the other end of the locking member fits with the operating button **19**.

Preferably, the locking member **20** includes a locking member main body **202**, a locking member pressing plate **200**, and a locking member hook **203**. The locking member main body **202** is pivotally arranged on the operating handle **15** through the second pivot **23**, the locking member pressing plate **200** fits with the operating button **19** (the operation button **19** is arranged on an upper side of the locking member pressing plate **200**), and the locking member hook **203** is in limit fit with the first locking groove **120** of the padlock device **12**.

Preferably, the locking member hook **200** and the locking member pressing plate **203** are respectively arranged at two ends of the locking member main body **202**, so that the locking member **20** has a V-shaped structure as a whole.

Preferably, one side of the locking member pressing plate **200** is provided with a first boss **201**, one end of the rear-end torsion spring **25** is in limit fit with the first boss **201**, and the other end of the rear-end torsion spring is in limit fit with the operating handle **15**.

Preferably, the operating button **19** includes an operating button head **190**, an operating button body **191**, and an operating button foot **192** which are sequentially connected. The operating button foot **192** is arranged on an upper side of the locking member pressing plate **200**, and the operating button **19** is inserted on the operating handle **15**, and is in sliding fit with the operating handle.

FIG. **1** and FIG. **4** show an embodiment of the operating handle **15** of the present invention.

As shown in FIG. **1** and FIG. **4**, the operating handle **15** includes a first fixing plate **154**, a locking shaft sliding hole **150**, a second hanging spring hole **152**, and a locking mechanism assembly hole **151** arranged thereon. Two first fixing plates **154** are arranged on the upper side of the operating handle **15** in parallel at an interval, the shaft plate **127** of the padlock device **12** is arranged between the two first fixing plates **154**, and the first pivot **30** passes through the shaft plate **127** and the first fixing plate **154** to connect the padlock device **12** and the operating handle **15** together. The locking shaft sliding hole **150** is arranged outside one end of the first fixing plate **154**, the locking shaft **14** is inserted into the locking shaft sliding hole **150** and is in sliding fit with the locking shaft sliding hole, and the second hanging spring hole **152** is arranged between the first fixing plate **154** and the locking shaft sliding hole **150**. One end of the spring **13** is connected with the first hanging spring hole **123** of the padlock device **12**, and the other end of the spring is connected with the second hanging spring hole **152**. The locking mechanism assembly hole **151** is arranged outside the other end of the first fixing plate **154**, the locking member **20** of the locking mechanism is arranged in the locking mechanism assembly hole **151** through the second pivot **23**, and the rear-end torsion spring **25** of the locking mechanism is sleeved on the second pivot **23**. One end of the rear-end torsion spring is in limit fit with a hole wall of the locking mechanism assembly hole **151**, and the other end of the rear-end torsion spring is in limit fit with the first boss **201** of the locking member **20**.

Preferably, as shown in FIG. **2**, the shaft plate **127** and the first web plate **126** of the padlock device **12** are both arranged between the two first fixing plates **154**, and the padlock hole **21** in the first web plate **126** is shielded by the two first fixing plates **154**.

FIG. **7** shows another embodiment of the operating handle **15** of the present invention.

The operating handle **15** of the embodiment is different from the above embodiment in that: the operating handle **15** is not provided with the second hanging spring hole **152**, the first convex column **153** is arranged on the first fixing plate **154** of the operating handle **15**, and the torsion spring **40** is sleeved on the first pivot **30**. One end of the torsion spring **40** is in limit fit with the first convex column **153**, and the other end of the torsion spring is in limit fit with the second convex column **122**.

The above is the further detailed descriptions of the present invention with reference to the specific preferred implementations, and the specific implementations of the present invention cannot be considered as being limited to these descriptions. Those of ordinary skills in the art of the present invention may further make several simple deductions or substitutions without departing from the concept of the present invention, and these deductions or substitutions should be regarded as belonging to the scope of protection of the present invention.

The invention claimed is:

1. A handle of a manual operation mechanism of a circuit breaker, comprising:

an operating handle,

a padlock device, and

a locking shaft, and

a locking mechanism,

wherein a middle of the padlock device is pivotally arranged on the operating handle, a front end of the padlock device is connected with the locking shaft, the padlock device is connected with the operating handle through a first driving member, a rear end of the padlock device is in limit fit with the locking mechanism, a padlock hole is arranged in the rear end of the padlock device,

wherein when the locking mechanism locks the padlock device, the padlock hole is shielded by the operating handle, and the padlock device enables the first drive member to store energy, and

wherein when the circuit breaker is in a switch-off state, the locking mechanism is unlocked, the first driving member makes the front end of the padlock device sink to drive the locking shaft to lock the operating handle, and meanwhile, the rear end of the padlock device is raised up to expose the padlock hole from an inside of the operating handle.

2. The handle of the manual operation mechanism of the circuit breaker according to claim **1**, wherein the first driving member is a spring, one end of the spring is connected with the padlock device, and the other end of the spring is connected with the operating handle.

3. The handle of the manual operation mechanism of the circuit breaker according to claim **1**, wherein the middle of the padlock device is pivotally arranged on the operating handle through a first pivot; and the first driving member is a torsion spring, the torsion spring is sleeved on the first pivot, one end of the torsion spring is connected with the padlock device and the other end of the torsion spring is connected with the operating handle.

4. The handle of the manual operation mechanism of the circuit breaker according to claim **1**, wherein the locking mechanism comprises a locking member, a rear-end torsion spring, and an operating button, a middle of the locking member is pivotally arranged on the operating handle through a second pivot, the rear-end torsion spring is sleeved on the second pivot, one end of the rear-end torsion spring is connected with the operating handle, the other end of the rear-end torsion spring is connected with the locking member, one end of the locking member is in limit fit with the rear end of the padlock device, the other end of the locking member fits with the operating button, and when the operating button is pressed, the locking member releases the rear end of the padlock device, the front end of the padlock device sinks, and the rear end of the padlock device is raised up.

5. The handle of the manual operation mechanism of the circuit breaker according to claim **4**, wherein the locking member comprises a locking member main body, a locking member pressing plate, and a locking member hook, the locking member main body is pivotally arranged on the operating handle through the second pivot, the locking member pressing plate fits with the operating button, and the locking member hook is in limit fit with the rear end of the padlock device.

6. The handle of the manual operation mechanism of the circuit breaker according to claim **5**, wherein the locking member hook and the locking member pressing plate are respectively arranged at two ends of the locking member main body, so that the locking member has a V-shaped structure as a whole.

7. The handle of the manual operation mechanism of the circuit breaker according to claim **1**, wherein the padlock device is a rod-shaped member, which comprises a first clamping groove arranged at the front end of the padlock device, one end of the locking shaft is provided with a locking shaft slot, a locking shaft cross bar is arranged in the locking shaft slot, and the locking shaft cross bar is clamped in the first clamping groove and is in sliding fit with the first clamping groove.

8. The handle of the manual operation mechanism of the circuit breaker according to claim **5**, wherein the rear end of the padlock device is provided with a first locking groove in limit fit with the locking member hook.

9. The handle of the manual operation mechanism of the circuit breaker according to claim **2**, wherein the middle of the padlock device is pivotally arranged on the operating handle through a first pivot, the padlock device comprises a first spring hanging hole, and the first spring hanging hole is arranged between a first clamping groove of the padlock device and the first pivot; and a second spring hanging hole is arranged in the operating handle, one end of the spring is connected with the first spring hanging hole, and the other end of the spring is connected with the second spring hanging hole.

10. The handle of the manual operation mechanism of the circuit breaker according to claim **3**, wherein the operating handle comprises a first fixing plate arranged thereon and a first convex column arranged on the first fixing plate; and the padlock device comprises a second convex column arranged thereon, the second convex column is located between the first clamping groove of the padlock device and the first pivot, one end of the torsion spring is connected with the first convex column, and the other end of the torsion spring is connected with the second convex column.

11. The handle of the manual operation mechanism of the circuit breaker according to claim **1**, wherein the padlock device is a rod-shaped member, which comprises a first ridge plate, a second ridge plate, a first web plate, a second web plate, a first clamping groove, the padlock hole, a shaft plate, and a first locking groove, the shaft plate is pivotally arranged on the operating handle through a first pivot, the first ridge plate, the shaft plate, and the second ridge plate are sequentially connected, the first web plate is arranged on one side of the first ridge plate and the first web plate is respectively connected with the first ridge plate and the shaft plate, the second web plate is arranged on one side of the second ridge plate and the second web plate is respectively connected with the second ridge plate and the shaft plate, the first web plate and the second web plate are respectively located on two sides of the shaft plate, the first web plate and the second web plate are located on a same side of the first ridge plate, the first clamping groove is arranged at one end of the second web plate far away from the shaft plate, the padlock hole is arranged in a middle of the first web plate, and the first locking groove is arranged at one end of the first web plate far away from the shaft plate.

12. The handle of the manual operation mechanism of the circuit breaker according to claim **11**, wherein the padlock device further comprises a first spring hanging hole arranged in the second web plate, and the first spring hanging hole is arranged between the first clamping groove and the shaft plate.

13. The handle of the manual operation mechanism of the circuit breaker according to claim **11**, wherein the padlock device further comprises a second convex column arranged on the second web plate, and the second convex column is arranged between the first clamping groove and the shaft plate.

14. The handle of the manual operation mechanism of the circuit breaker according to claim **1**, wherein the operating handle comprises a first fixing plate, a locking shaft sliding

hole, and a locking mechanism assembly hole, the locking shaft sliding hole is arranged outside one end of the first fixing plate, and the locking mechanism assembly hole is arranged outside the other end of the first fixing plate.

15. The handle of the manual operation mechanism of the circuit breaker according to claim **14**, wherein the operating handle further comprises a second spring hanging hole, and the second spring hanging hole is arranged between the locking shaft sliding hole and the first fixing plate.

16. The handle of the manual operation mechanism of the circuit breaker according to claim **14**, wherein the operating handle further comprises a first convex column, and the first convex column is arranged on one side of the first fixing plate.

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